

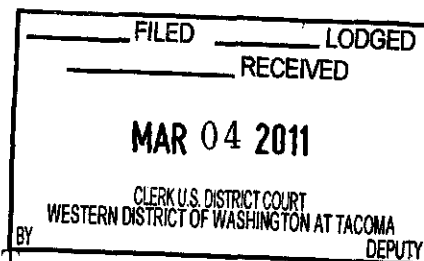


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11-CV-00037-RESP

(pgs 1-37)



UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF WASHINGTON AT TACOMA

ENPAC, LLC, an Ohio limited liability company
 , an Ohio limited

Civil Action No. 11-cv-37

RESPONSE FOR A MORE
 DEFINATE STATEMENT AND
 REQUEST FOR DAMAGES

Plaintiff,

v.

CHASSIDY F. LUCAS, individually and CB
 STORMWATER LLC d/b/a STORMWATER LLC,
 A Washington limited liability company.

March 3, 2011

Defendants.

In response to a more definite statement including additional evidence

First we would like to notify the court that because "Newman and Newman" interrupted our response, is likely due to affiliation with the plaintiffs' attorney George Lowe whom has worked within the same vicinity of each other for many years. Since Newman and Newman initiated a business relationship with the defendant and in which upon discovery works with the plaintiff attorney himself, this was an unfair illegal mischievous attempt in order to interrupt the opportunity to defend and respond in a timely and professional manner. We would now like to inform the court of the scandalous reputation that Enpac has practiced for many years past until present including, acts of larceny, lies, bribery and infringement. At this time we would like to present the court with evidence to support this brutal attack toward the many years of work as a Washington State Scientist, First Responder, Hazardous Waste Specialist, Chemical processing specialist, U.S. Spill Instructor, Educator, Program Developer, Researcher, and Inventor. Here is my defense to my works entitled patent no. 7,771,591 filter system for catch basins.

This case starts June 24, 2002 since this is the date I filed for trademark of the "Sea Life Saver" this described my thesis which I am entitled as a Ph.D and Scientist FOR: STORM WATER

CATCH BASIN FILTERS COMPRISED OF A WIRE BASKET AND FABRIC FILTER
SACK OR LINER, FOR ATTACHMENT TO CONCRETE STORM DRAINS as follows
Exhibit "A"

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EXHIBIT A



United States Patent and Trademark Office

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Record 1 out of 1

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Typed Drawing

Word Mark	SEA LIFE SAVER
Goods and Services	IC 019. US 001 012 033 050. G & S: STORM WATER CATCH BASIN FILTERS COMPRISED OF A WIRE BASKET AND FABRIC FILTER SACK OR LINER, FOR ATTACHMENT TO CONCRETE STORM DRAINS. FIRST USE: 20021120. FIRST USE IN COMMERCE: 20021120
Mark Drawing Code	(1) TYPED DRAWING
Serial Number	78138098
Filing Date	June 24, 2002
Current Filing Basis	1A
Original Filing Basis	1B
Published for Opposition	December 31, 2002
Registration Number	2917932
Registration Date	January 11, 2005
Owner	(REGISTRANT) Lucas-Mellor, Chassidy F. INDIVIDUAL UNITED STATES 2914 - 84th Ave. Ct. W University Place WASHINGTON 98466
Assignment Recorded	ASSIGNMENT RECORDED
Type of Mark	TRADEMARK
Register	PRINCIPAL
Live/Dead Indicator	LIVE

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[HOME](#) | [SITE INDEX](#) | [SEARCH](#) | [eBUSINESS](#) | [HELP](#) | [PRIVACY POLICY](#)

1 In 2002 I purchased "spill kit" clean up supplies from "Roni Sasaki" whom I spoke to about my
2 thesis thoroughly. Roni was selling and manufacturing "the silt sack" see exhibit "B"

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EXHIBIT B

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US005575925A

United States Patent [19][11] **Patent Number:** **5,575,925****Logue, Jr.**[45] **Date of Patent:** ***Nov. 19, 1996**[54] **STORM SEWER CATCH BASIN AND FILTER**[76] **Inventor:** **George E. Logue, Jr., HC 64, Box 298A, Trout Run, Pa. 17771**[*] **Notice:** The term of this patent shall not extend beyond the expiration date of Pat. No. 5,372,714.[21] **Appl. No.:** **353,786**[22] **Filed:** **Dec. 12, 1994****Related U.S. Application Data**[63] **Continuation of Ser. No. 139,098, Oct. 21, 1993, Pat. No. 5,372,714.**[51] **Int. Cl.⁶** **E03F 5/14**[52] **U.S. Cl.** **210/747; 210/164; 210/232; 210/237; 210/445; 210/474; 404/4; 404/5**[58] **Field of Search** **210/162, 163, 210/164, 165, 232, 445, 473, 474, 237, 484, 485, 747; 404/2, 3, 4, 5**[56] **References Cited****U.S. PATENT DOCUMENTS**

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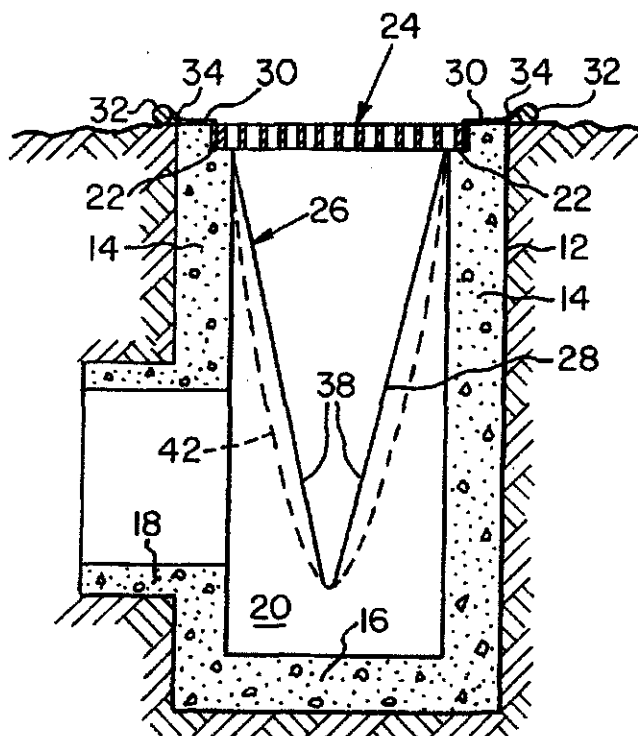
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Primary Examiner—Robert J. Popovics
Attorney, Agent, or Firm—Webb Ziesenheim Bruening
 Logsdon Orkin & Hanson P.C.

[57] **ABSTRACT**

The invention relates to a removable filter for buried catch basins. The filter includes a bag located below grade level in the catch basin and looped flaps which extend above grade level and aid in removal of the filter from the catch basin. The filter is held in place in the basin by a heavy grate which rests on the flaps. The flaps extend at grade level away from the grate. The filter is removed from the catch basin for dumping by inserting a lift rod in each flap loop and hooking lift chains to the rods at openings in the loops.

15 Claims, 1 Drawing Sheet

U.S. Patent

Nov. 19, 1996

5,575,925

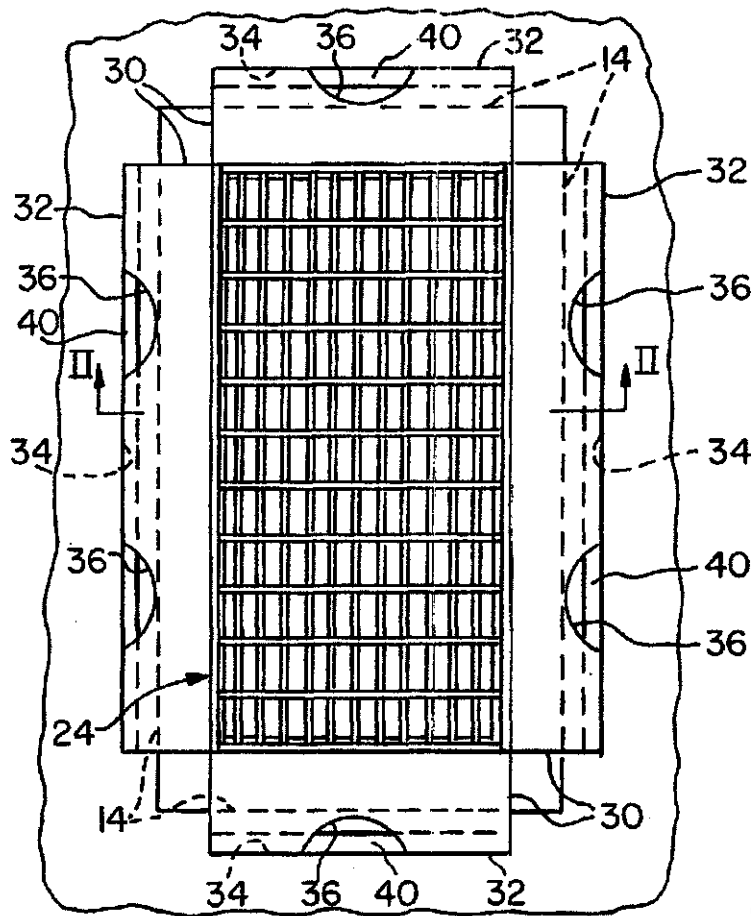


FIG. 1

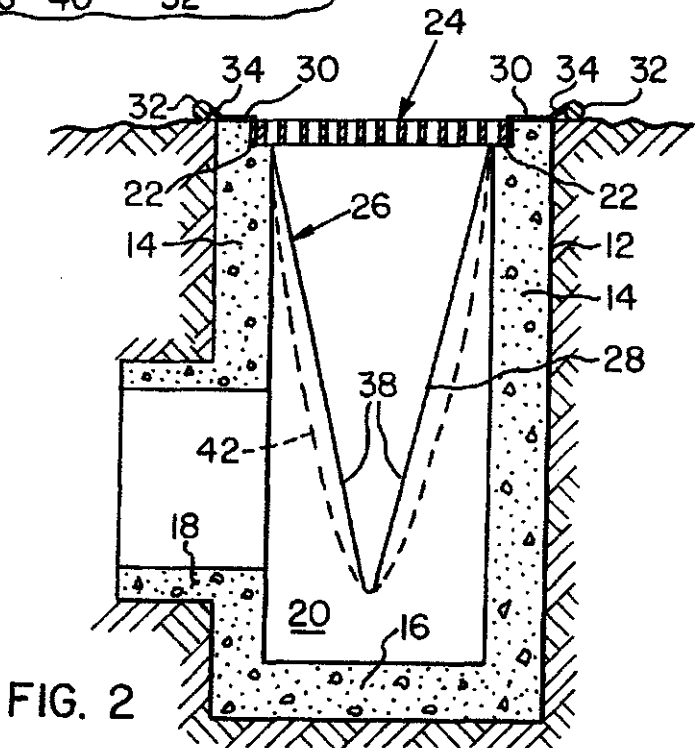


FIG. 2

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STORM SEWER CATCH BASIN AND FILTER**CROSS REFERENCE TO RELATED APPLICATION**

This application is a continuation of application Ser. No. 08/139,098 filed Oct. 21, 1993, now U.S. Pat. No. 5,372,714.

FIELD OF THE INVENTION

The invention relates to filters for storm sewer catch basins.

DESCRIPTION OF THE PRIOR ART

Ground water from heavy rains or melted snow is collected in a storm sewer catch basin and flows into an underground sewer line. The water flows into the basin through openings in a grate on the top of the basin.

Water entering a sewer line should be free of solids. Conventional storm sewer filters remove solids from the water before the water flows into the catch basin. These filters are made of a porous material and are located at or above grade level. The filters may be placed horizontally on the top of the grate or may be stood up vertically in a circle above grade level, surrounding the grate. Water flows freely through the filter and into the catch basin. Solids are captured by the filter. Over time, the solids build up on the filter, impede the free flow of water through the filter and the collected water floods the area surrounding the storm sewer. Conventional ground storm sewer filters located at or above grade level are readily visible.

For the foregoing reasons there is need for a below grade catch basin filter which filters solids from water without impeding the flow of water through the catch basin and into the sewer and which is easily removed from the catch basin for dumping when filled.

SUMMARY OF THE INVENTION

The invention is a storm sewer catch basin and a removable storm sewer filter. The filter is held in a storm sewer catch basin below grade level between the top of the basin and a grate. The filter includes a bag formed from a porous geotextile material having inwardly tapered sidewalls and flaps at the top of the bag. The grate rests on the flaps to hold the bag in place in the basin. The ends of the flaps are looped and extend at grade level away from the grate. Openings are spaced along the length of the edges of the looped flaps.

Water and solids flow through the openings in the grate and into the catch basin. The water flows into and through the filter bag and out the catch basin. Solids are captured in the bag. The solids accumulate in the bag below grade level and out of sight without impeding the flow of water through the catch basin. When it is necessary to remove the full bag from the catch basin, rods are inserted into the looped flaps, the grate is removed and hooks are secured to the exposed rods at the openings to permit lifting of the heavy, filled filter. The filter is dumped and replaced in the basin, the rods are removed and the grate is refitted in the top of the basin to hold the filter in place.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawings illustrating the invention, of which there are two sheets and one embodiment.

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DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of a filter bag in a catch basin below a grate with filter bag flaps extending away from each side of the basin; and

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Concrete catch basin 12 has an open upper end located at grade level, in-ground sidewalls 14 and floor 16. Concrete storm sewer pipe 18 extends away from one of the sidewalls 14 a distance above floor 16. The sidewalls and floor define chamber 20. A recess or groove 22 extends around the inner edge of the top of the catch basin facing chamber 20. Rectangular grate 24 closes the top of basin 12. The sides of the grate fit in recess 22 in the top of the basin. Ground water flows through the grate and into catch basin chamber 20.

Catch basin filter 26 includes a filter bag 28 in basin chamber 20 and four flaps 30 joining the top of the bag. The flaps extend along the sides of the top of the basin 12 and are sandwiched in recess 22 between the basin and the grate. Flap ends 32 are located outside the sides of the grate. Loops 34 are sewn into the ends of the flaps and extend along the sides of the basin outside the grate. Openings 36 are cut in the ends of the flaps through the loops. As shown in FIG. 1, two openings 36 are provided in each long flap and one opening is provided in each short flap. Lift rods 40 are inserted in the loops 34 and are exposed at openings 36. When it is necessary to lift the bag from the basin, a lift rod is inserted in each flap loop between the open ends of the flap. Lift chains are hooked to the exposed rods at the openings to lift the full filter from the basin.

Filter bag 28 includes four tapered sidewalls 38 each located adjacent one wall of basin 12. The sidewalls are sewn together to form the closed filter bag. Flaps 30 are extensions of the bag sidewalls.

Filter 26 is preferably made from a woven plastic fabric. Narrow strips of a plastic, such as polypropylene, are tightly woven together to form a porous fabric. The fabric permits liquids to flow freely through the filter bag but captures solids. A filter made from plastic fabric, commonly referred to as geotextile, can support a load of solids having a total weight of up to 4,000 pounds.

Bag 28 of filter 26 is located in chamber 20 with flaps 30 extending at grade level away from the catch basin. The tapered bag sidewalls 38 are located away from the walls of chamber 20 and outlet 18 as the bag hangs in the catch basin. As shown in FIG. 1, the upper or top portion of each bag sidewall extends along each basin sidewall. The width of the bag sidewalls decreases below the grate so that the bag hangs free of the sidewalls of the catch basin and does not obstruct filtration even when filled with solids and outwardly bowed as shown by dashed line 42. Grate 42 is fitted in the recess sandwiching the flaps between the grate and the basin. See FIG. 2. The weight of the grate maintains the bag in the chamber.

Ground water and solids flow through the grate and into the filter bag 28 in the catch basin 12. The ground water flows through the bag sidewalls and out of the catch basin through outlet pipe 18. Solids are filtered from the ground water and captured in the bag. Over time, solids accumulate in the bag. The weight of the accumulated solids causes the bag to expand. As the bag expands and becomes full, the

5,575,925

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walls of the bag do not come in contact with the sidewalls of the catch basin chamber. Thus, the expanded bag does not block the flow of water through the catch basin chamber or into the pipe 18 and can be easily removed from the chamber.

When the bag is full, lift rods 40 are inserted in the flaps 36. The grate 24 is removed, hooks are secured to the length of rod exposed in arcuate openings 36 and the bag is lifted from the catch basin. The bag is dumped and replaced in the catch basin. The grate is refitted in recess 22 to hold the empty filter in place and the rods are removed from the flaps.

While I have illustrated and described a preferred embodiment of my invention, it is understood that this is capable of modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

What I claim as my invention is:

1. A catch basin filter for use with a catch basin and a grate, wherein the catch basin filter includes:

a) a filter bag adapted to be received in the catch basin for capturing the solids which enter the catch basin through an inlet of the catch basin, said bag having an open top adapted to be positioned at the catch basin inlet, a closed bottom and bag sidewalls;

b) a plurality of elongated lift flaps each having a first end and a second end joining the top of the bag and adapted to extend across sidewalls of the catch basin at the catch basin inlet, loops defined in the flaps away from the bag and spaced openings intermediate either end of each flap in the loops, each of said loops adapted to receive a lift rod; and

c) a plurality of lift rods of sufficient length extended into the loops in the flaps so that portions of the rods are exposed at the openings for attachment to lift members, whereby portions of the flaps between the filter bag and the loops are adapted to extend between the grate and the catch basin inlet so that the grate sandwiches the flaps in place against the catch basin and the flaps support the bag in the catch basin.

2. The catch basin filter of claim 1, wherein the catch basin is rectangular and the filter bag includes two pairs of opposed flaps.

3. The catch basin filter of claim 1, wherein the bag and flaps are formed from plastic fabric.

4. The catch basin filter as in claim 1, wherein the bag has a pair of narrow sidewalls and a pair of wide sidewalls and a pair of narrow flaps and a pair of wide flaps.

5. The catch basin filter as in claim 2, including a single opening in each narrow flap and a pair of openings in each wide flap.

6. The catch basin filter as in claim 1, wherein a recess is defined at the top of the catch basin, the recess adapted to support the grate.

7. The catch basin filter as in claim 1, wherein a recess is defined in the top of the catch basin, and the grate being adapted to seat in the recess for securing the flaps against the recess.

8. The catch basin filter as in claim 1, wherein the filter bag is formed of a woven material.

9. The catch basin filter of claim 8, wherein the woven material is plastic.

10. A method of installing a catch basin filter in a catch basin, the catch basin comprising:

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an inlet through which water and solids flow into the catch basin, an outlet through which water flows out of the catch basin, wherein the inlet is positioned above the outlet, and a plurality of basin sidewalls, each sidewall having an upper end at the inlet and a recess located at the upper end, the sidewalls defining a chamber, the grate located on the top of the basin inlet and having grate sides positioned in the recesses, and the filter comprising:

a filter bag having an open top, a closed bottom and one or more sidewalls extending between the top and the bottom of the bag; and

a flap joining the top of each sidewall, said method comprising the steps of:

placing the filter bag in the catch basin so that each of the bag sidewalls are adjacent to the catch basin sidewalls and the filter bag open top is positioned above the filter bag closed bottom;

placing each of the filter bag flaps into the recess of the upper end of the catch basin; and

sandwiching each of the filter bag flaps between the top of the basin and the grate sides, thereby holding the bag in place.

11. The method as claimed in claim 10 further comprising the steps of:

removing the grate after the filter bag has accumulated with solids;

removing the filter bag from the catch basin; and dumping of the filter bag.

12. The method as claimed in claim 11, wherein said filter bag further comprises a removal member secured to one of said filter bag sidewalls, the method further comprising removing the filter bag from the catch basin by using a lift member coacting with the removal member.

13. A catch basin filter for use with a catch basin and a grate, wherein the catch basin filter includes:

a) a filter bag adapted to be received in the catch basin filter for capturing the solids which enter the catch basin through an inlet of the catch basin, said bag having a rectangularly shaped open top adapted to be positioned at the catch basin inlet, a closed bottom and four tapered bag sidewalls, wherein upper ends of the sidewalls define the rectangularly shaped open end; and

b) four elongated lift flaps each having a first end and a second end joining the top of the filter bag, wherein each of the flaps is joined to an upper end of a respective one of the bag sidewalls, the lift flaps are adapted to extend across sidewalls of the catch basin at the catch basin inlet, loops defined in a plurality of the flaps positioned away from the bag and spaced openings intermediate either end of each flap defined in the loops, whereby portions of the flaps between the filter bag and the loops are adapted to extend between the grate and the catch basin inlet so that the grate sandwiches the flaps in place against the catch basin and the flaps support the bag in the catch basin.

14. The catch basin filter of claim 13, wherein the filter bag is formed of a woven material.

15. The catch basin filter as in claim 13, wherein the bag has a pair of narrow sidewalls and a pair of wide sidewalls and a pair of narrow flaps and a pair of wide flaps.

* * * * *



US005575925C1

(12) **REEXAMINATION CERTIFICATE** (4284th)**United States Patent**
Logue, Jr.(10) **Number:** **US 5,575,925 C1**
(45) **Certificate Issued:** **Mar. 6, 2001**(54) **STORM SEWER CATCH BASIN AND FILTER**(75) **Inventor:** **George E. Logue, Jr.**, HC 64, Box
298A, Trout Run, PA (US) 17771(73) **Assignee:** **George E. Logue, Jr.**, Trout Run, PA
(US)**Reexamination Requests:**

No. 90/005,603, Dec. 30, 1999

No. 90/005,652, Feb. 29, 2000

Reexamination Certificate for:Patent No.: **5,575,925**Issued: **Nov. 19, 1996**Appl. No.: **08/353,786**Filed: **Dec. 12, 1994**(*) **Notice:** This patent is subject to a terminal disclaimer.**Related U.S. Application Data**(63) Continuation of application No. 08/139,098, filed on Oct.
21, 1993, now Pat. No. 5,372,714.(51) **Int. Cl.**⁷ **E03F 5/14**(52) **U.S. Cl.** **210/747; 210/164; 210/232;**
210/237; 210/445; 210/474; 404/4; 404/5(58) **Field of Search** **210/747, 164,**
210/232, 237, 445, 474; 404/4, 5(56) **References Cited****U.S. PATENT DOCUMENTS**

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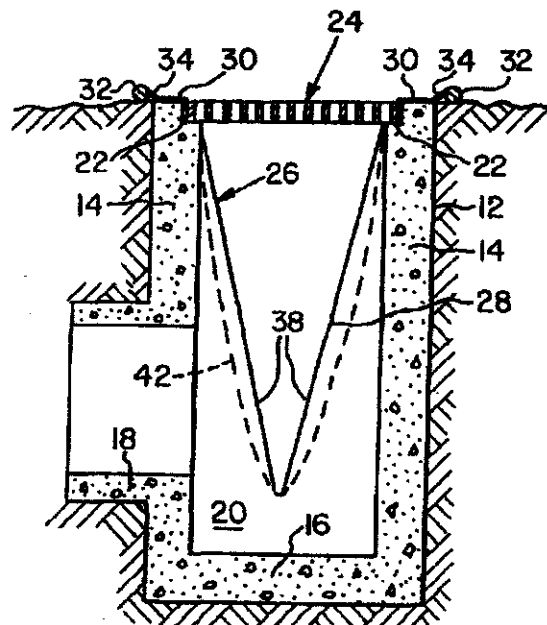
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"Soil Erosion Control Plan", City of Milwaukee Department of Public Works, 1988.

* cited by examiner

Primary Examiner—Robert Popovics(57) **ABSTRACT**

The invention relates to a removable filter for buried catch basins. The filter includes a bag located below grade level in the catch basin and looped flaps which extend above grade level and aid in removal of the filter from the catch basin. The filter is held in place in the basin by a heavy grate which rests on the flaps. The flaps extend at grade level away from the grate. The filter is removed from the catch basin for dumping by inserting a lift rod in each flap loop and hooking lift chains to the rods at openings in the loops.



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**REEXAMINATION CERTIFICATE
ISSUED UNDER 35 U.S.C. 307**

THE PATENT IS HEREBY AMENDED AS
INDICATED BELOW.

Matter enclosed in heavy brackets [] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

ONLY THOSE PARAGRAPHS OF THE
SPECIFICATION AFFECTED BY AMENDMENT
ARE PRINTED HEREIN.

Column 2, lines 48-60:

Bag 28 of filter 26 is located in chamber 20 with flaps 30 extending at grade level away from the catch basin. The

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tapered bag sidewalls 38 are located away from the walls of chamber 20 and outlet 18 as the bag hangs in the catch basin. As shown in FIG. 1, the upper or top portion of each bag sidewall extends along each basin sidewall. The width of the bag sidewalls decreases below the grate so that the bag hangs free of the sidewalls of the catch basin and does not obstruct filtration even when filled with solids and outwardly bowed as shown by dashed line 42. Grate [42] 24 is fitted in the recess sandwiching the flaps between the grate and the basin. See FIG. 2. The weight of the grate maintains the bag in the chamber.

AS A RESULT OF REEXAMINATION, IT HAS BEEN
DETERMINED THAT:

The patentability of claims 1-15 is confirmed.

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1 and “ the drain diaper”, Exhibit “C” without a license to do so.

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EXHIBIT C

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US006214216B1

(12) **United States Patent**
Isaacson

(10) **Patent No.:** **US 6,214,216 B1**
(45) **Date of Patent:** **Apr. 10, 2001**

(54) **DRAIN FILTER SUPPORT**

(76) **Inventor:** **Ronald Isaacson, 1 Winnipeg Ct.,
Morganville, NJ (US) 07751**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/411,279**

(22) **Filed:** **Oct. 4, 1999**

(51) **Int. Cl.⁷** **B01D 29/05; B01D 35/02**

(52) **U.S. Cl.** **210/162; 210/163; 210/164;
210/232; 210/480; 404/4**

(58) **Field of Search** **210/162, 163,
210/164, 232, 474, 479, 480; 404/4, 5**

(56) **References Cited**

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6,045,691 * 4/2000 McDermott 210/164
6,086,758 * 7/2000 Schilling et al. 210/232

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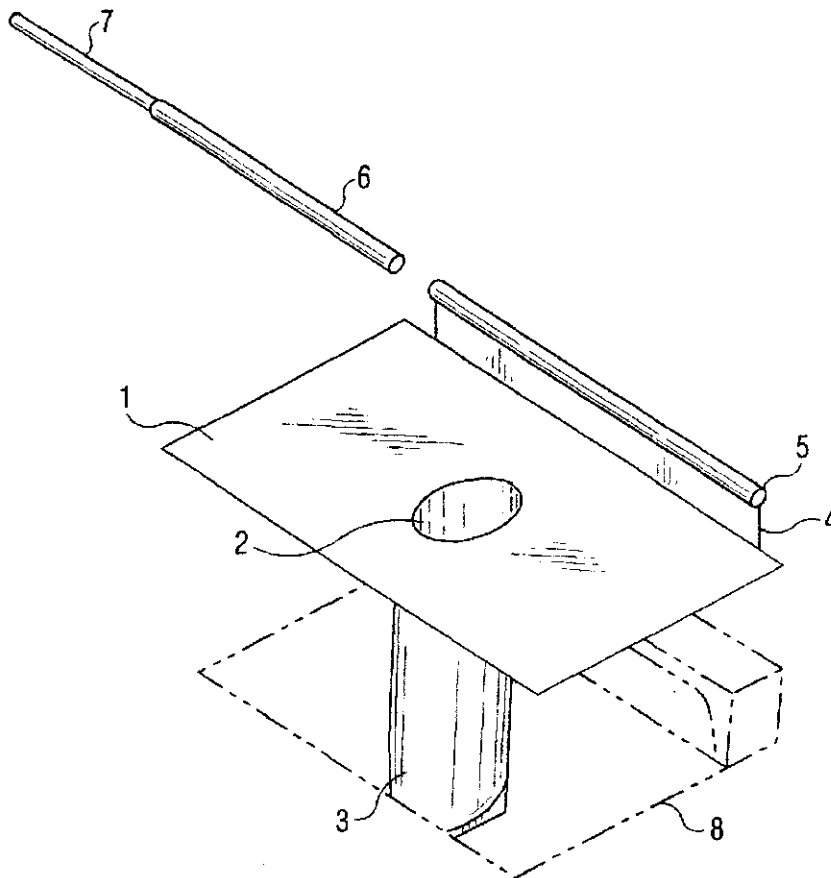
Primary Examiner—Christopher Upton

(74) *Attorney, Agent, or Firm*—Robert M. Skolnik

(57) **ABSTRACT**

A catch basin insert or filter is supported in an open type curb inlet storm drain found on streets and in parking lots. Catch basin filters and inserts are designed to collect coarse sediments, oil, grease and debris from storm water runoff. Such filters normally require support on all four sides of a grate using the weight of the grate. A loop and rod attaches one or more sides of a filter or insert inside a curb inlet storm sewer vault instead of using the weight of the grate.

3 Claims, 3 Drawing Sheets



U.S. Patent

Apr. 10, 2001

Sheet 1 of 3

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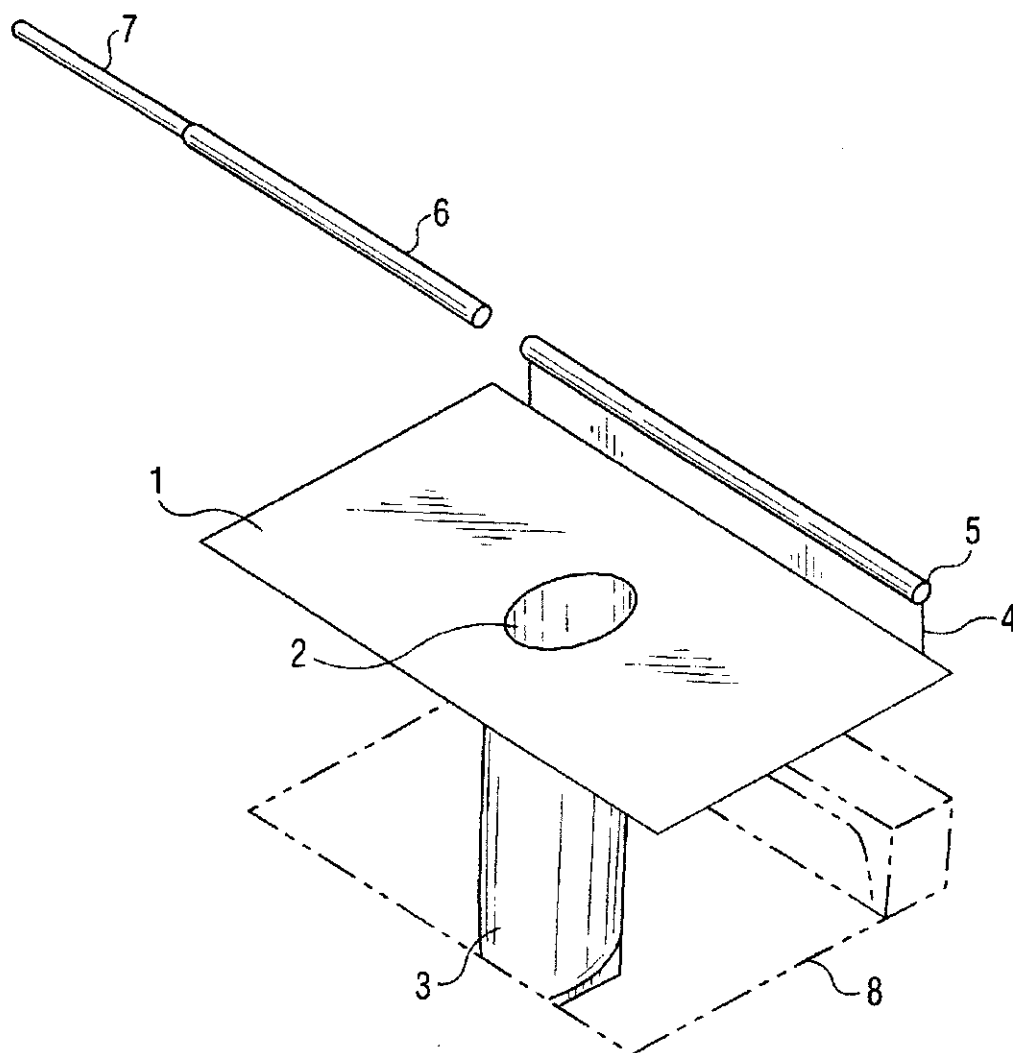


FIG. 1

U.S. Patent

Apr. 10, 2001

Sheet 2 of 3

US 6,214,216 B1

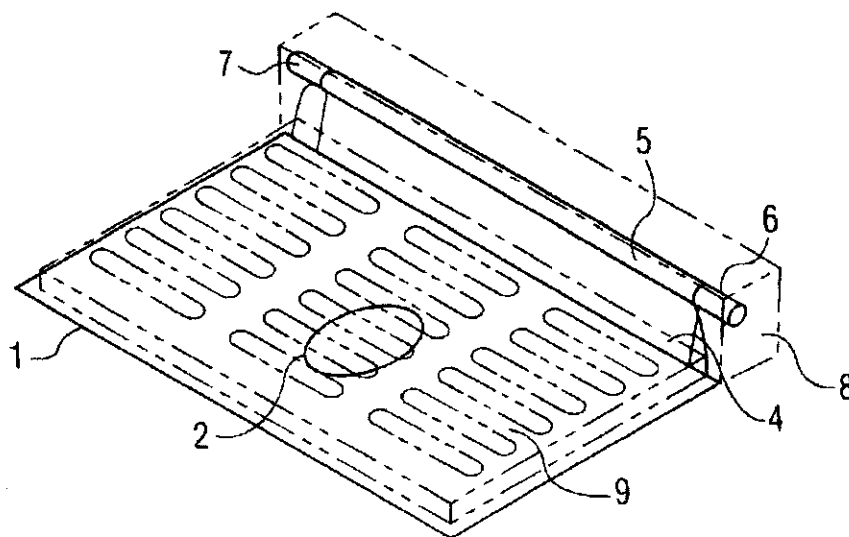


FIG. 2

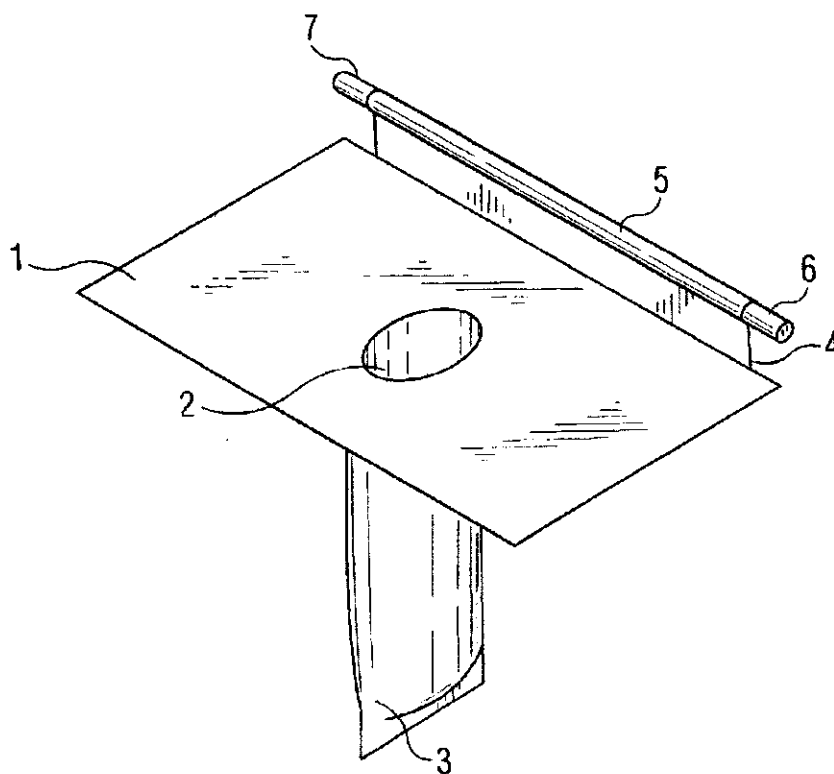


FIG. 3

U.S. Patent

Apr. 10, 2001

Sheet 3 of 3

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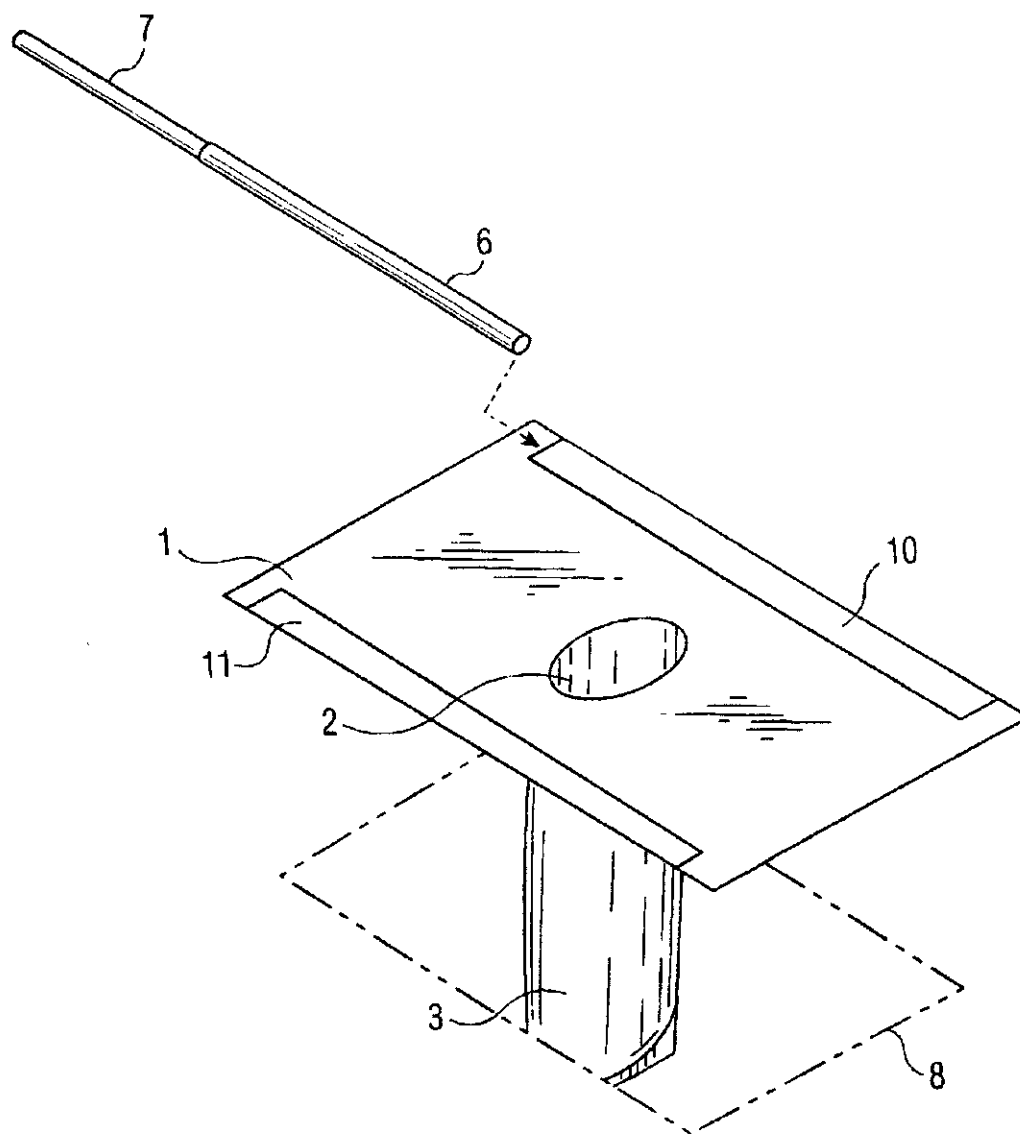


FIG. 4

US 6,214,216 B1

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DRAIN FILTER SUPPORT**BACKGROUND OF THE INVENTION****1. Field of the Invention**

The present invention relates to a drain filter support. The support of the present invention modifies the known drain filter sold under the trademark DRAIN DIAPER® so that it can be used with curb and other drains without the need to support the filter about the entire periphery of the drain cover.

2. Description of the Related Art

Sewer drain filters are taught in several prior art patents.

Boosey 2,263,259 discloses a self-cleaning sewer drain where the catch bag 15 is supported around the entire diameter of the pipe 13.

Arntyr, et al., 4,419,232 disclose a collection bag supported by hooks formed on an insert. Round and rectangular versions are shown.

Murfue, et al., 5,133,619, relates to a special construction for a storm drain.

Logue, 5,372,714 and 5,575,925 has carrying loops 34 are formed in the edges of the filter bag and lift rods 40 are inserted into the loops.

Schneider, 5,405,539 discloses the use of pneumatic cylinders 34 and 35 to support a filter structure in storm drain housing. This is best seen in FIG. 2.

Chinn, et al., 5,725,782, FIG. 7, attaches the bag type roll filter to a curb drain with straps 32 or hood 37.

Fanelli, 5,733,445, installs a special covering grate and filter assembly over an existing grate. The filter assembly is supported in the covering grate as shown in FIGS. 4 and 6.

Stetler, 5,744,048 requires a specially configured filter 70 so that the filter can be supported on a support element fabricated as part of a storm drain insert.

SUMMARY OF THE INVENTION

The invention is a modification to the known DRAIN DIAPER® drain filter to enable the filter to be used in drains with the need to support the filter about the entire periphery of the grate. The modification involves the formation of one or more loops on one or more edges of the filter and inserting a spring loaded rod in the loop so that the rod supports the side in the drain housing. In one embodiment of the invention, this support also creates a dam of filter material to prevent debris from entering the mouth of a curb drain.

The present invention supports a catch basin insert or filter in an open type curb inlet storm drain found on streets and in parking lots. Catch basin filters and inserts are designed to collect coarse sediments, oil, grease and debris from storm water runoff. Such filters require support on all four sides of a grate using the weight of the grate. The present invention attaches such a filter or insert inside a curb inlet storm sewer where only three sides of a grate are available for support. The invention may also be used to support the insert or filter within the drain vault without the need to support the insert using the weight of the grate.

The present invention modifies the filter by creating a reinforced pocket on one or more side length of the filter/insert. The pocket(s) accommodates a spring-loaded adjustable heavy-duty rod. The rod is placed inside the pocket and adjusted in length to fit inside the curb inlet drain and/or inside the vault. The rod is then positioned against each sidewall inside the curb drain or vault so that it is secured tightly against the sidewalls. The rod may be adjustable in

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length and in spring force exerted within the curb drain or the vault. The other sides of the filter without the pockets are supported by the weight of the grate.

The present invention also provides a vertical barrier or dam on the open curbside of the catch basin to prevent debris from falling behind the filter/insert into the basin.

A principal object and advantage of the invention is the provision of a drain filter for catch basins.

Another object and advantage of the invention is the provision of a curb drain filter for curbside catch basins which inhibits debris, etc. from entering the open portion of the catch basin.

A still further object of the invention is the provision of a curb drain filter that modifies an existing filter so that it can be used in curb drains.

Another object and advantage of the invention is the provision of curb drain support which is adjustable so that it can be used in curb drains of different dimensions.

A still further object and advantage of the invention is the provision of a drain filter support which does not require use of the storm drain grate.

Another object and advantage of the invention is the provision of a drain filter support which does not require use of a drain grate to hold the filter.

The foregoing, as well as further objects and advantages of the invention will become apparent to those skilled in the art from a review of the following detailed description of my invention, reference being made to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view of my invention;

FIG. 2 is a perspective view of the device shown in FIG. 1 in use at a curb drain;

FIG. 3 is an assembly view of the device shown in FIG. 1.

FIG. 4 is a perspective view of a modification to the device shown in FIGS. 1-3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIGS. 1-3, where like reference numerals are used to designate like parts, the drain filter has a collection bag 3 attached to a rectangular (or other shape) filter portion 1. A loop 5 is formed on one side of the portion 1 creating a wall 4 of filter material. A rod having two portions 6 and 7 fits within loop 5. The rod may be a spring-loaded rod so that portions 6 and 7 may be adjusted in length.

As shown in FIGS. 1-2, the curb drain 8 has a grate 9 covering same as is well known. An opening between the grate surface and the curb is also known. In use, the grate 9 is removed, filter portion 1 with the bag 3 is placed in the drain, and the grate 9 replaced with the sides of the portion 1 held in place by the weight of the grate 9. The rod is then inserted into the loop 5 and adjusted to firmly seat within the internal vault structure of the curb drain. Portion 4 is then extended upwards forming a dam to block debris from entering the drain vault through the opening.

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As is known in the art, the drain filter shown at numerals 1-3 may be made of materials known in the prior art which are permeable to water, but impermeable to other liquids and solids.

Other sides of the drain filter may be supported in the vault by formation of loops on the other sides of the drain filter and employing spring loaded rods in those loops to support the filter within the vault against the sidewalls of the vault. As shown in FIG. 4, in which like reference numerals are used to denote like parts from FIGS. 1-3, additional pockets or sleeves such as 10 and 11 are formed on the edges of the filter portion 1. These sleeves or pockets receive spring-loaded rod for supporting that side of the DRAIN DIAPER® beneath the grate against the walls of the storm drain vault. The filter insert is thus independent of support by the weight of the grate. The sleeves or pockets 10 and 11 may be used at one, two, three or all sides of the filter insert.

Further modifications to the apparatus of the invention may be made without departing from the spirit and scope of

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the invention; accordingly, what is sought to be protected is set forth in the appended claims.

What is claimed is:

1. A drain filter having a collection bag and a rectangular filter surface for supporting said bag by the weight of a drain grate on three sides of said rectangular filter surface; a pocket formed on the fourth side of said rectangular filter support; and, an adjustable length rod mounted in said pocket for mounting said fourth side within a curbside storm drain.

2. The drain filter of claim 1 further including a portion of said rectangular filter surface connected to said pocket for forming a dam preventing debris from entering a storm drain.

3. The drain filter of claim 1 further including means connected to said rectangular filter surface and to said pocket for preventing debris from entering a storm drain.

* * * * *



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Petro-Marine Company, Inc., has developed a new pollution prevention product that will help companies comply with environmental provisions of the Clean Water Act.

The Curb Inlet Drain Diaper Insert is currently available for storm sewer inlets with open curb sides. Its unique (patent-pending) design incorporates an adjustable support rod that not only protects the curb inlet from stormwater containing sediments, oil, and debris, but also provides a 2- to 3-inch barrier on the open curb side to prevent debris from falling into the catch basin from the street side. This spring-loaded rod suspends the Drain Diaper in place without relying on the weight of the grate. The insert is available with multiple rods, so it will fit any curb inlet design.

Drain Diaper products have been successfully used by maintenance shops, industrial facilities, parking lots, marinas, ports, shipyards, car washes, shopping malls, truck stops, service stations, airports, and rail yards. The curb inlet and the catch basin Drain Diaper inserts are a cost-effective way to avoid contaminating our water supplies and to meet best-management-practice requirements of the Clean Water Act.

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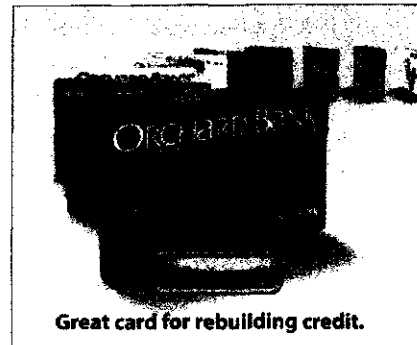
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To Install:

1. Remove the grate.
2. Place the DrainGuard in the catch basin.
3. Set the grating back over the catch basin.
4. Trim the excess fabric.

To Remove:

1. Secure the pull strap and remove the metal grate.
2. Remove the insert.
3. Properly dispose of the used insert or empty it to use again.

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DDS	DRAIN DRAINER SEDIMENT ONLY		25.00			
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1 I did not know that she was not licensed to manufacture but because she demonstrated the
2 capability to manufacture liners I asked her to manufacture my Sea Life Saver liner in order for
3 me to continue to perform my field data and research practices and make these available to me.

4 Roni applied for patent July. 23, 2002 for a liner similar to "silt sack" and "drain diaper" these
5 type of inserts are environmentally preferred for construction sites. This type of insert is
6 considered for temporary installment, there is a cylindrical bag that hangs below the skirt of the
7 liner in order to enclose the waste material for disposal. Hazardous waste handling requires
8 containment in order to scientifically control spillage of waste material. Without containment
9 this would be considered a potentially hazardous and unsafe method and would more likely cause
10 a spill in violation to our water bodies. See exhibit "D"

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EXHIBIT D

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US007201843B2

(12) **United States Patent**
Sasaki et al.

(10) **Patent No.:** **US 7,201,843 B2**
(45) **Date of Patent:** **Apr. 10, 2007**

(54) **FRAMED STORM DRAIN INSERT
SEDIMENT FILTER**

(75) Inventors: **Derek A. Sasaki**, Vancouver, WA (US);
Roni R. Sasaki, Vancouver, WA (US)

(73) Assignee: **Spider Environmental, Inc.**,
Vancouver, WA (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 591 days.

(21) Appl. No.: **10/202,200**

(22) Filed: **Jul. 23, 2002**

(65) **Prior Publication Data**

US 2004/0016692 A1 Jan. 29, 2004

(51) Int. Cl.
B01D 29/27 (2006.01)

(52) U.S. Cl. **210/164; 210/478; 210/495**

(58) **Field of Classification Search** **210/153;**
210/162-164, 317, 474, 477, 478, 482, 495,
210/499, 456, 479, 480, 497.01, 767; 248/94;
383/33

See application file for complete search history.

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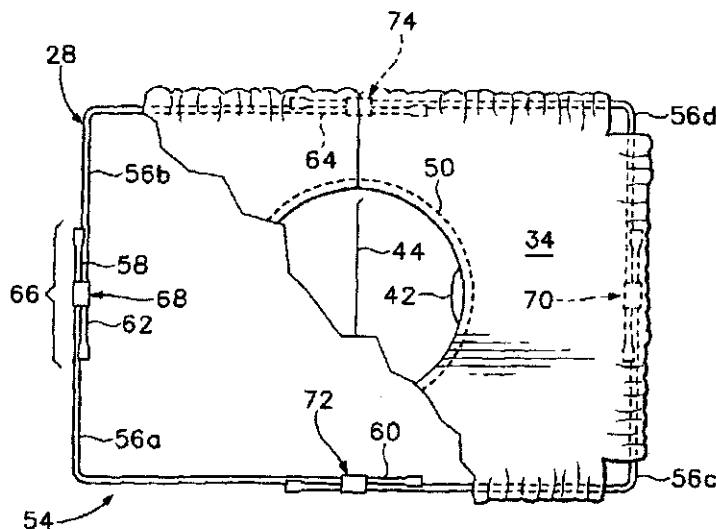
Primary Examiner—Matthew O. Savage

(74) Attorney, Agent, or Firm—Marger Johnson &
McCollom, P.C.

(57) **ABSTRACT**

The new design has three primary features: (1) a rectangular collar having a centrally located circular cutout with sewn loops formed on the outer edges of the collar; (2) a filter bag having top edges attached to the rectangular collar along the periphery of the circular cutout so that the bag is inserted within the cutout and drops below the level of the collar; and (3) a heavy gauge steel wire inserted within the sewn loops of the rectangular collar forming a structural frame along the periphery of the rectangular collar. The structural frame is preferably formed with overlapping portions coupled together with a retaining means. The overlapping portions are slidably moved relative to one another to change the first and/or second dimension of the frame so that the filter can fit within catch basins openings of various measurements.

9 Claims, 4 Drawing Sheets



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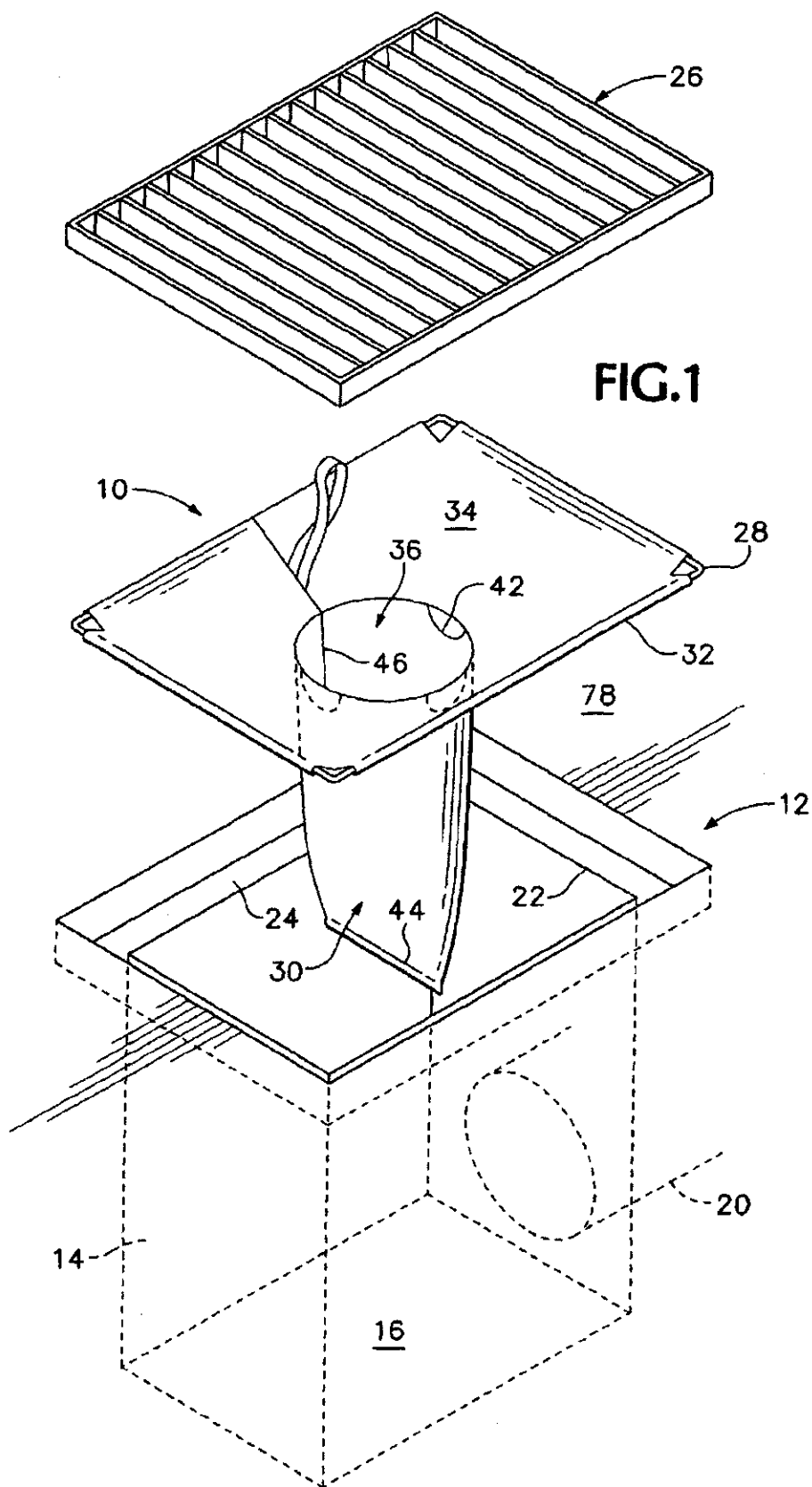
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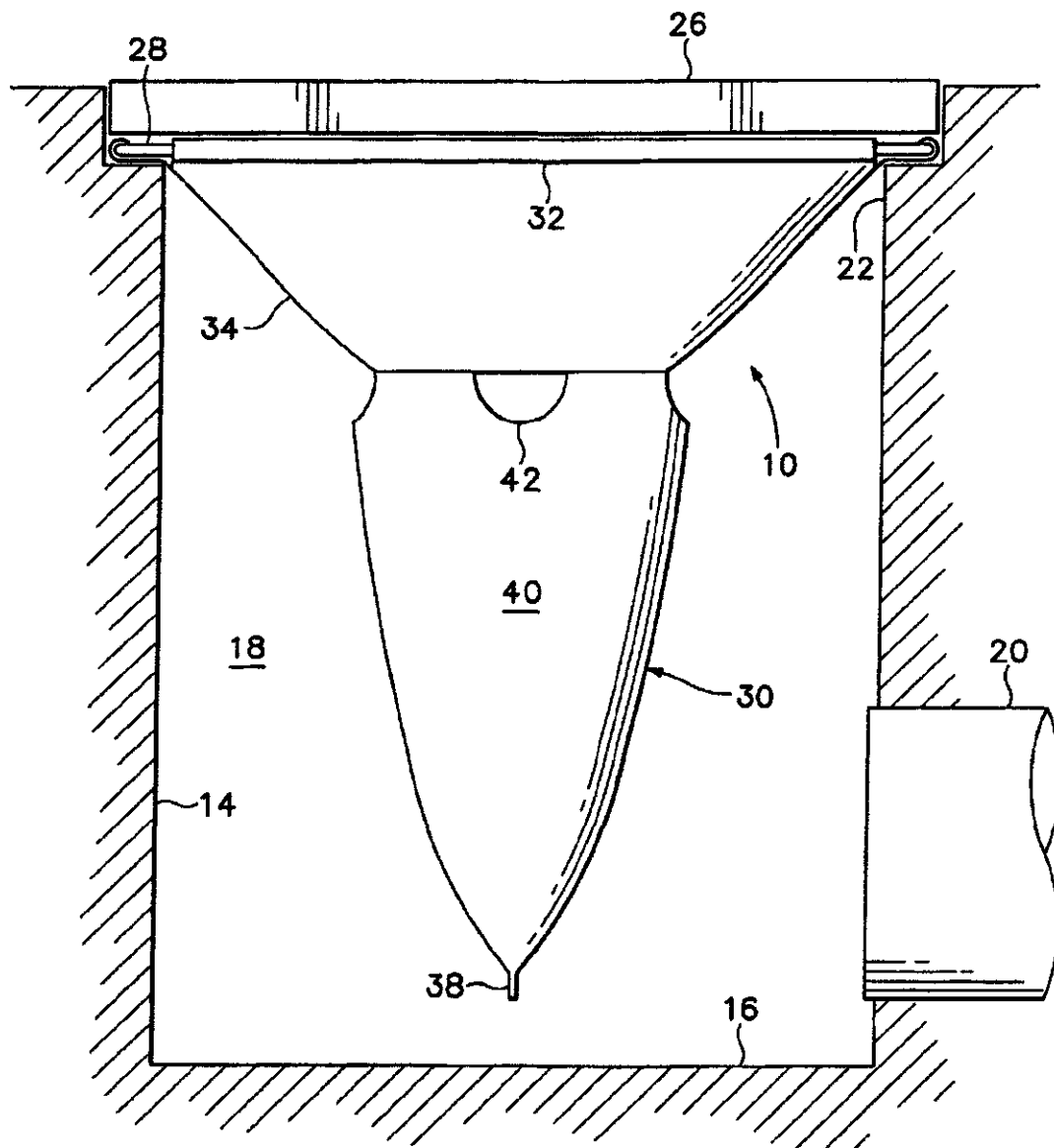


FIG.2

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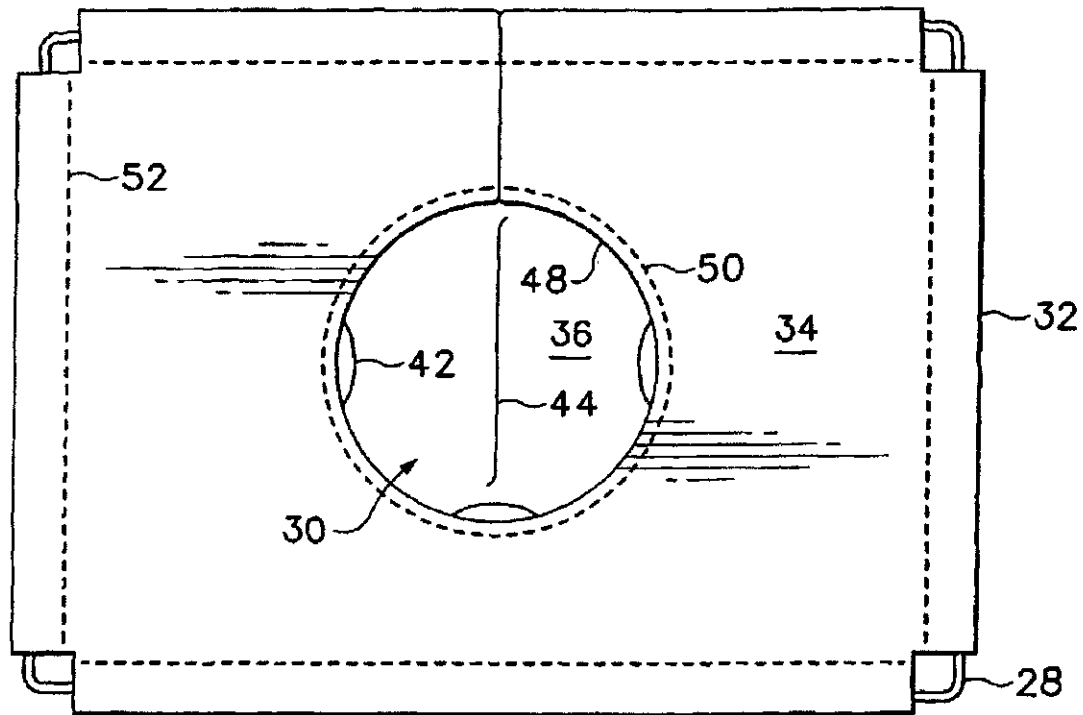


FIG. 3

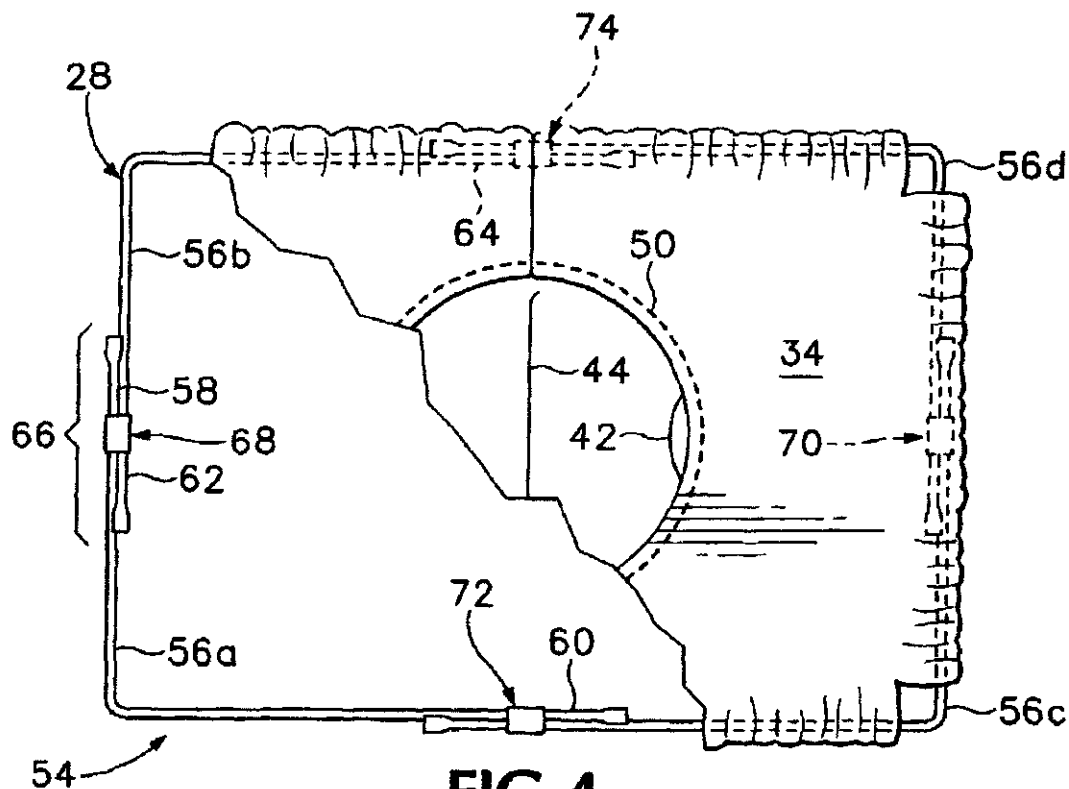


FIG. 4

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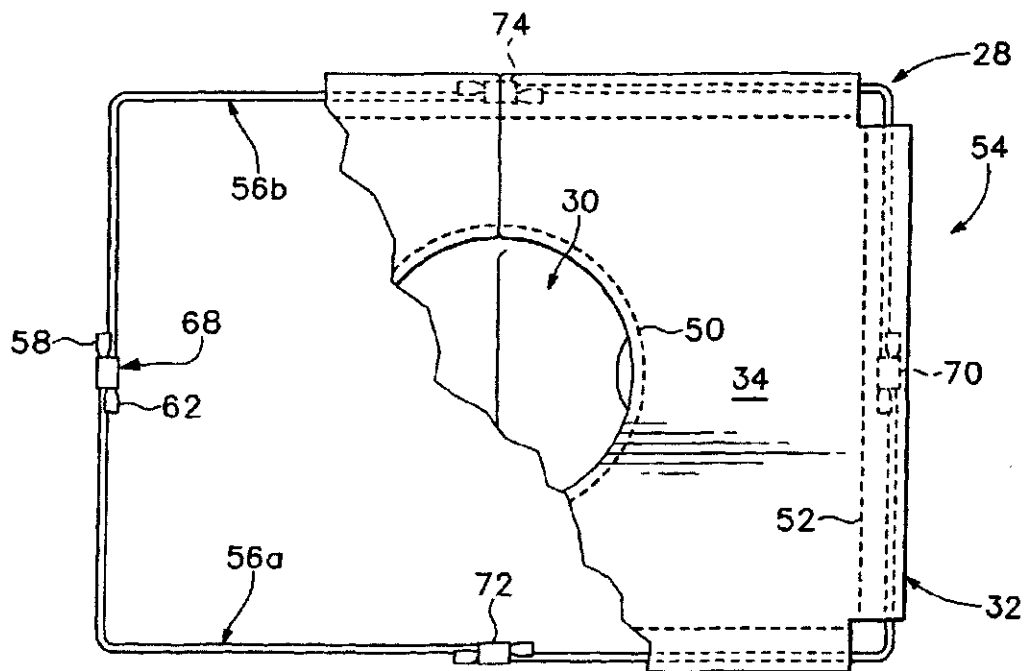


FIG.5

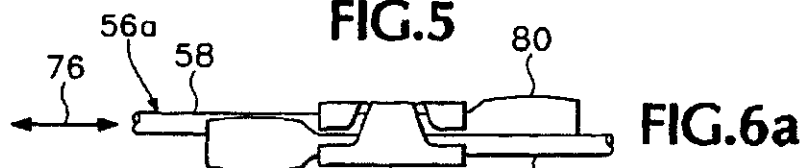


FIG.6a

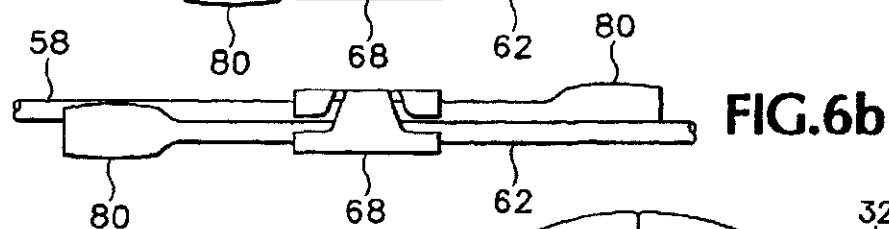


FIG.6b

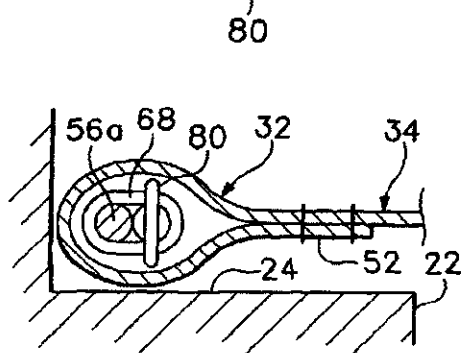


FIG.7

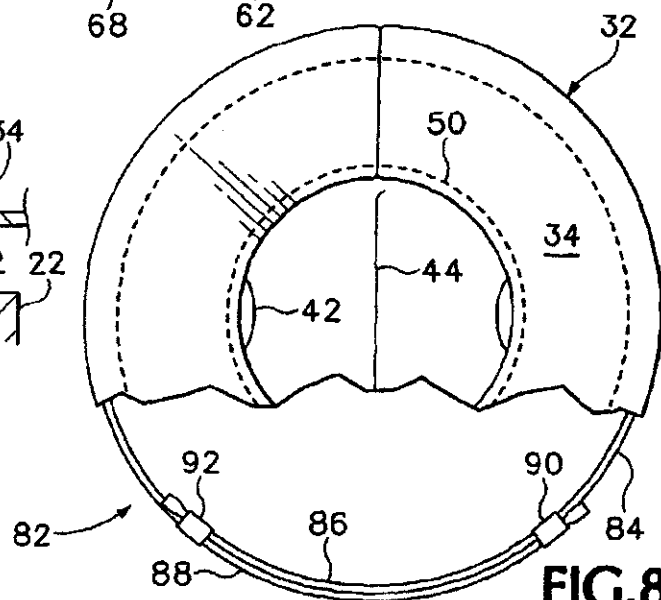


FIG.8

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FRAMED STORM DRAIN INSERT SEDIMENT FILTER

BACKGROUND OF THE INVENTION

This invention relates generally to storm water sewer systems, and more particularly to a drain insert adapted to prevent sediment or debris such as leaves, sand, stones, gravel and, in some cases, petroleum products, from entering into the storm water removal system.

There is increased importance being placed by cities on water treatment prior to the water entering the storm sewer system. Several treatment problems have been identified: stormwater run-off is contaminated with heavy metals and hydrocarbons which have leaked onto the streets and highways from a variety of sources, and leaves and other debris enter through the storm drain grate and clog storm basins outflows. In a typical storm water collection system, ground water from heavy rains or melted snow is collected in a storm sewer catch basin and flows into an underground sewer line. The water flows into the basin through openings in a grate on the top of the basin.

Water entering a sewer line should be free of solids. Early storm sewer filters removed solids from the water before the water flowed into the catch basin. These filters were made of a porous material and were located at or above grade level, which were readily visible. A very early version of this method simply used stacked hay bales around the periphery of the storm drain grate. The filters were typically placed horizontally on the top of the grate or, like the hay bales, stood up vertically in a circle above grade level, surrounding the grate. Water flowed freely through the filter and into the catch basin. Solids were captured by the filter. Over time, the solids built up on the filter, thereby impeding the free flow of water through the filter. As a result, the collected water flooded the area surrounding the storm sewer.

More modern catch basin inserts have been developed that can be installed below grade so that the solids are filtered from water without impeding the flow of water through the catch basin and into the sewer. Additionally, such filters were designed to be readily removed from the catch basin for dumping when filled with sediment and debris. Some examples of these types of filters are U.S. Pat. No. 5,575,925 (Logue, Jr.), and U.S. Pat. No. 6,086,758 (Schilling et al.), U.S. Pat. No. 6,093,314 (Wilson et al.), U.S. Pat. No. 6,059,964 (Strawser), and U.S. Pat. No. 6,045,691 (McDermott). These designs, while an improvement over the above-ground filters, suffer from several drawbacks. The Logue design, for instance comprises a filter bag with flaps that extend out from the periphery of the grate so that the grate anchors the filter bag within the catch basin. When the grate is lifted, however, the bag is subject to slide into the catch basin. The remaining prior art uses rigid frames that are adapted to fit a specifically sized drain opening and were thus not easily adaptable to differently sized or shaped openings.

Accordingly, the need remains for a drain filter insert that addresses these drawbacks in the prior art.

SUMMARY OF THE INVENTION

The new design has three primary features: (1) a rectangular collar having a centrally located circular cutout with sewn loops formed on the outer edges of the collar; (2) a filter bag having top edges attached to the rectangular collar along the periphery of the circular cutout so that the bag is inserted within the cutout and drops below the level of the collar; and (3) a heavy gauge steel wire inserted within the sewn loops of the rectangular collar forming a structural frame along the periphery of the rectangular collar.

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The new design is used by removing the grate, placing the structurally supported peripheral edge of the rectangular collar within the recesses formed at the top of the drain basin, and then setting the grate on top of the peripheral edge including the heavy gauge steel wire. It is not generally necessary for holding the new filter insert within the basin since, even without the grate, the device is capable of holding 50 pounds of material without collapsing into the basin.

The advantages of the new design is that it is inexpensive and can be easily removed from the basin without fear of collapse into the basin due to the structural frame sitting on top of the basin recesses.

An alternate design uses the same collar and filter bag. The wire frame, however, is formed from four L-shaped wires that each overlap and form the four corners of the frame. The overlapping portions are slidingly clamped together with a heavy-duty "staple" of a type currently used within the furniture industry. The overlapping wires can then slide relative to one-another so that the dimensions of the rectangular frame can be changed and fitted into differently sized drain basins. The rectangular collar material is "gathered" along the wire frame so that its dimensions can change as well.

More generally, however, the catch basin filter constructed according to a preferred embodiment of the invention is for use with a catch basin of a type having a basin sidewall with an upper end at a catch basin inlet and a recess located at the upper end into which a grate is received. The catch basin filter includes a two-dimensional support frame adapted to be received within the recess of the catch basin beneath the grate. The filter further includes a filter bag coupled to the support frame, where the filter bag has an open top adapted to be positioned at the catch basin inlet, a closed bottom and a bag sidewall. When installed, the catch basin filter is placed wholly within the catch basin chamber so that the frame rests on the recess of the catch basin and the grate placed over the frame. The rigidity of the frame is such that it is capable of maintaining the catch basin filter in position with the bag suspended within the catch basin chamber with or without the grate installed on top of the frame.

In an adjustable embodiment of the invention, the frame includes means for changing a first and/or second dimension of the support frame so that the frame can be adjusted to fit catch basins having a variety of inlet sizes. According to a preferred embodiment of the frame changing means, the frame includes a rigid member such as heavy gauge wire slidingly maintained within a retaining member such as a furniture staple where the rigid member is moved within the retaining member to change the dimension of the rigid member and thus the frame.

The foregoing and other objects, features and advantages of the invention will become more readily apparent from the following detailed description of a preferred embodiment of the invention that proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the catch basin and filter constructed and installed according to a preferred embodiment of the invention shown in exploded view.

FIG. 2 is a side sectional view of the invention shown in FIG. 1.

FIG. 3 is a top plan view of the catch basin filter according to a first embodiment of the invention.

FIG. 4 is a top plan view in partial cutaway of an adjustable catch basin filter constructed according to a second embodiment of the invention shown in a partially

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collapsed or contracted condition for use with catch basins having rectangular openings or inlets.

FIG. 5 is a top plan view in partial cutaway of the adjustable catch basin filter of FIG. 4 shown in a maximally dimensioned or extended condition.

FIGS. 6a and 6b illustrate the preferred means for adjusting the dimensions of the catch basin filter in extended and contracted positions, respectively.

FIG. 7 is a sectional view of the means in FIGS. 6a and 6B as installed within the filter and resting on the recess of the catch basin.

FIG. 8 is a top plan view in partial cutaway of an adjustable catch basin filter constructed according to a third embodiment of the invention for use with circular catch basin inlets.

DETAILED DESCRIPTION

A catch basin filter constructed according to a preferred embodiment of the invention is shown generally at 10 in FIG. 1. Filter 10 is intended to be installed within a below-grade 78 catch basin 12 of a type having basin sidewalls 14 and floor 16 defining a chamber 18. A sewer pipe 20 extends away from one of the sidewalls 14 a distance above the floor 16. There would typically be four sidewalls for a rectangular chamber and one continuous sidewall for a cylindrical chamber. The catch basin 12 includes an upper end defining a catch basin inlet 22 and a recess 24 located at the upper end into which a grate 26 is normally received. Ground water and solids flow through the grate and inlet, into the catch basin chamber 18, and thence out through the sewer pipe 20.

As shown also in FIGS. 2 and 3, catch basin filter 10 includes a two-dimensional support frame 28 adapted to be received within and rest upon recess 24 of catch basin 12 and beneath grate 26. As the catch basin inlet 22 has a rectangular opening into catch basin chamber 18, frame 28 is similarly rectangular and is sized with a length and width to hang on a horizontal surface of recess 24 to thereby support the remainder of the filter attached thereto. The filter further includes a filter bag 30 coupled to the support frame as via loops 32 sewn in the fabric of a collar 34 (see, e.g., FIG. 7). Filter bag 30 has an open top 36, closed bottom 38 and bag sidewall 40, and is adapted to be positioned at the catch basin inlet 22 and suspended within catch basin chamber 18. Bag 30 preferably includes overflow apertures 42 located at a top portion of the bag sidewall 40 to allow excess (unfiltered) water to exit bag 30 and into the catch basin during heavy rainstorms.

The bag 30 as shown in FIG. 3 is formed of a single piece of geotextile nonwoven fabric rolled into a cylinder to form the single bag sidewall 40 and round open top 36. The bag is then closed with a bottom seam 44 and a side seam 46. A rectangular expanse of the same filter fabric is used to form collar 34. A centrally located circular cutout 48 is formed in collar 34 and the topmost portion of the bag sidewall is affixed via seam 50 thereto so that the bag is inserted within the cutout and drops below the level of the collar. Material along the periphery of the collar expanse 34 is folded back and affixed via seam 52 to the collar to form the loops 32 through which the 28 frame is received.

An alternate embodiment of the catch basin filter is shown generally at 54 in FIG. 4. Filter 54 is adjustable in two dimensions so that both (or either) the width and the length of support frame 30 can be adjusted to allow the frame to be fitted within catch basins of various dimensions. Filter 54 includes four L-shaped rigid members 56a-56d, with members 56b and 56c being first and second adjacent rigid members to member 56a, respectively, and member 56d being the opposed L-shaped rigid member to member 56a. Each of the L-shaped rigid members 56a-56d have two end

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portions, such as end portions 58 and 60 on member 56a, and end portions 62 and 64 on member 56b. One end portion of a one member overlaps an end portion of an adjacent member, for instance end portion 58 of member 56a overlaps end portion 62 of member 56b to form an overlapping section 66. The remaining members are arranged so that there are a total of four overlapping sections such as section 66, thereby forming a rectangular support structure.

Each overlapping section, such as section 66, includes a retaining member 68. Portions of the overlapping section 66 are slidably received within the retaining member 68 so that the end portions received 58, 62 can be moved in opposing directions relative to one another to thereby change the length and width of the rectangular support frame. To change the width, for instance, the overlapping sections in retaining member 68 and opposing receiving member 70 (coupling together L-shaped rigid members 56c and 56d) are manipulated as by pulling the top and bottom sections apart or pushing them together. Similarly, to change the length, the overlapping sections in opposing retaining members 72 and 74 are pulled apart to lengthen the frame or pushed together to shorten the frame.

FIG. 4 shows the filter 60 in a contracted state and FIG. 5 shows the same filter 60 in a fully expanded state. The collar 34 includes an expanse of fabric so that it is expandable in the first and second dimensions, as by including gathered fabric (FIG. 4) which is then pulled taut when the frame is expanded (FIG. 5).

It is understood that the filter 60 can be modified so that it is expandable in only a single dimension. Instead of the frame being formed of four L-shaped rigid members, it could be formed of two U-shaped members coupled together using two opposed receiving members on the two resulting overlapping sections, such as members 72, 74. The U-shaped members can then be pulled apart or pushed together until the desired width of the filter is achieved.

The dimension changing means are shown in more detail in FIGS. 6a and 6b showing maximally expanded and contracted positions, respectively. FIG. 6a shows overlapping section 66 comprised of end portion 58 of rigid member 56a and end portion 62 of rigid member 56b. The retaining member 68 coupling together members 56a and 56b is preferably of the type used in the furniture building industry, a metal staple clamped around the two members with enough force to maintain the members together but still allow the members to slide in opposing directions (double-sided arrow 76) when sufficient pulling or pushing force is applied to the members. A retaining end is formed at the distal end of the end portion, such as end 80 on end portion 62, with the retaining end 80 engageable with the retaining member 68 to provide a sliding boundary on the rigid member 62. When the rigid member 62 is a heavy gauge steel wire, the end of the wire can be flattened to increase its width so that the end cannot slide through the staple 68. The retaining end thereby prevents the rigid portions from being pulled completely out from the retaining member 68.

A side view of a portion of the filter is shown in section in FIG. 7. The means for changing the first dimension, comprised of rigid members 56a, 56b and retaining member 68 are received within loop 32 sewn within the collar 34. The rigid members received within retaining members 72 and 74 (not shown in FIG. 7) are manipulated to lengthen or shorten the filter frame such that the rigid members and retaining member 68 (and opposing rigid members and retaining member 70) of the frame are able to rest on the horizontal surface of the recess 24 formed at the top 22 of the catch basin sidewalls. As shown in FIG. 2, the collar, when used in the catch basin, is dimensioned so that it does not extend past the recess to a point outside the grate.

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An alternate embodiment useful to fit round catch basin inlets is shown at 82 in FIG. 8. The support frame of filter 82 includes an annular rigid member 84 having first and second overlapping end portions 86, 88. The overlapping end portions 86, 88 are received within retaining members 90, 92 so that a diameter of the annular member 84 is changed responsive to movement of the end portions relative to one another within the retaining member. Again, the fabric expanse of collar 34 can be increased (or alternately be somewhat elastic) to accommodate a change in the dimensions of the filter frame. The loops 32 may therefore be expandable in the expansive dimension in cooperation with the means for changing the dimension of the support frame received therein.

Having described and illustrated the principles of the invention in a preferred embodiment thereof, it should be apparent that the invention can be modified in arrangement and detail without departing from such principles. We claim all modifications and variation coming within the spirit and scope of the following claims.

We claim:

1. A catch basin filter for use with a catch basin of a type having a basin sidewall with an upper end at a catch basin inlet and a recess located at the upper end into which a grate is received, wherein the catch basin filter includes:

a two-dimensional support frame adapted to be received within the recess of the catch basin beneath the grate, said support frame including at least a first set of overlapping portions moveable relative to one another within a first retaining member to change a first dimension of the support frame and a second set of overlapping portions moveable relative to one another within a second retaining member to change a second dimension of the support frame; and

a filter bag coupled to the support frame, said filter bag having an open top adapted to be positioned at the catch basin inlet a closed bottom and a bag sidewall.

2. The catch basin filter of claim 1, further including a retaining end defined on a distal end of one of the overlapping portions, said retaining end engageable with the first retaining member to provide a first sliding boundary on the overlapping portion.

3. A catch basin filter for use with a catch basin of a type having a basin sidewall with an upper end at a catch basin inlet and a recess located at the upper end into which a grate is received, wherein the catch basin filter includes:

a two-dimensional support frame adapted to be received within the recess of the catch basin beneath the grate; a filter bag coupled to the support frame, said filter bag having an open top adapted to be positioned at the catch basin inlet, a closed bottom and a bag sidewall; means for changing a first dimension of the support frame; and

a collar attached about a periphery of the filter bag top with loops defined in the collar away from the bag, said loops being expandable in the first dimension in cooperation with the means for changing a first dimension of the support frame received therein.

4. The catch basin filter of claim 3, wherein the collar, when used within the catch basin, is dimensioned so that it does not extend past the recess to a point outside the grate.

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5. A catch basin filter for use with a catch basin of a type having a basin sidewall with an upper end at a catch basin inlet and a recess located at the upper end into which a grate is received, wherein the catch basin filter includes:

a two-dimensional support frame adapted to be received within the recess of the catch basin beneath the grate; and

a filter bag coupled to the support frame, said filter bag having an open top adapted to be positioned at the catch basin inlet, a closed bottom and a bag sidewall, wherein the support frame includes:

an L-shaped rigid member, a first adjacent L-shaped rigid member, a second adjacent L-shaped rigid member, and an opposed L-shaped rigid member, each of the L-shaped rigid members having two end portions and arranged so that the first end portion of the L-shaped rigid member overlaps an end portion of the first adjacent L-shaped rigid member and the second end portion of the L-shaped rigid member overlaps an end portion of the second adjacent L-shaped rigid member, with the opposed L-shaped rigid member likewise arranged so as to form a rectangular support frame having four overlapping sections; and

for each overlapping section, a retaining member for slidably receiving the overlapping section therein so that the end portions of the rigid members forming the overlapping section can be moved in opposing directions relative to one another to thereby change the length and width of the rectangular support frame so that the support frame can be received within catch basin sidewall recesses of various dimensions.

6. The catch basin filter of claim 5, further including a collar attached about a periphery of the filter bag top with loops defined in the collar away from the bag, said loops being expandable in the first and second dimension in cooperation with the means for changing a first and second dimension of the support frame received therein.

7. The catch basin filter of claim 6, wherein the collar, when used within the catch basin, is dimensioned so that it does not extend past the recess to a point outside the grate.

8. A catch basin filter for use with a catch basin of a type having a basin sidewall with an upper end at a catch basin inlet and a recess located at the upper end into which a grate is received, wherein the catch basin filter includes:

a two-dimensional support frame adapted to be received within the recess of the catch basin beneath the grate, means for changing a first dimension of the support frame; and

a filter bag having an open top adapted to be positioned at the catch basin inlet, a closed bottom and a bag sidewall, said filter bag being coupled to the support frame via loops and fabric of such a size as to allow it to expand in synergy with the means for changing the first dimension of the support frame such that the fabric is gathered along the loops in a contracted state and tensioned in an expanded state.

9. The catch basin filter of claim 8, further including a collar attached about a periphery of the filter bag open top.

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1 Roni was selling catch basin inserts that were demonstratively and functionally different than
2 the Sea Life Saver liner. In order to manufacture the Sea Life Saver Liner Roni Sasaki was asked
3 to create a design agreement which she signed and faxed October 2002. See Exhibit "E"